AT89STK-10 Starter Kit

Hardware User Guide

Section 1

Introduction

This document describes the Flash Evaluation Board dedicated to the AT89C5130/31A and the AT8xC5122D USB microcontrollers. This board is designed to enable an easy evaluation of the Mass Storage USB class using demonstration firmware (refer to firmware Guide). It must be plugged to a CPU board (AT89C5130/31A or AT8xC5122 D evaluation board).

1.1 Features

The Flash evaluation board provides the following features:

- Support the following microcontrollers :
  – AT89C5130A
  – AT89C5131A
  – AT8xC5122D
- No external power supply required
  – Power supplied by the USB line via the CPU board (AT89C5130/31A or AT8xC5122 D evaluation board)
- On board DataFlash memory (ATMEL AT45DB321B, 4MB)
- Support Nand Flash memory (MICRON MT29F2GO8AABWP, 256MB) - Add-on board
- Support Pluggable DataFlash Card (ATMEL AT45DCB004C, 4 MB)

Rev. 7534A–USB–07/05

Figure 1-1. Flash Evaluation Board

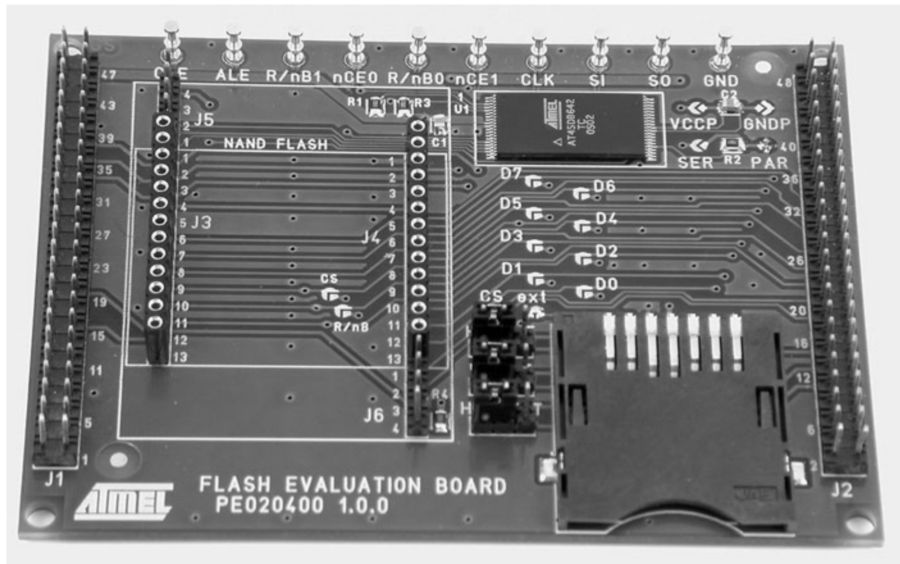
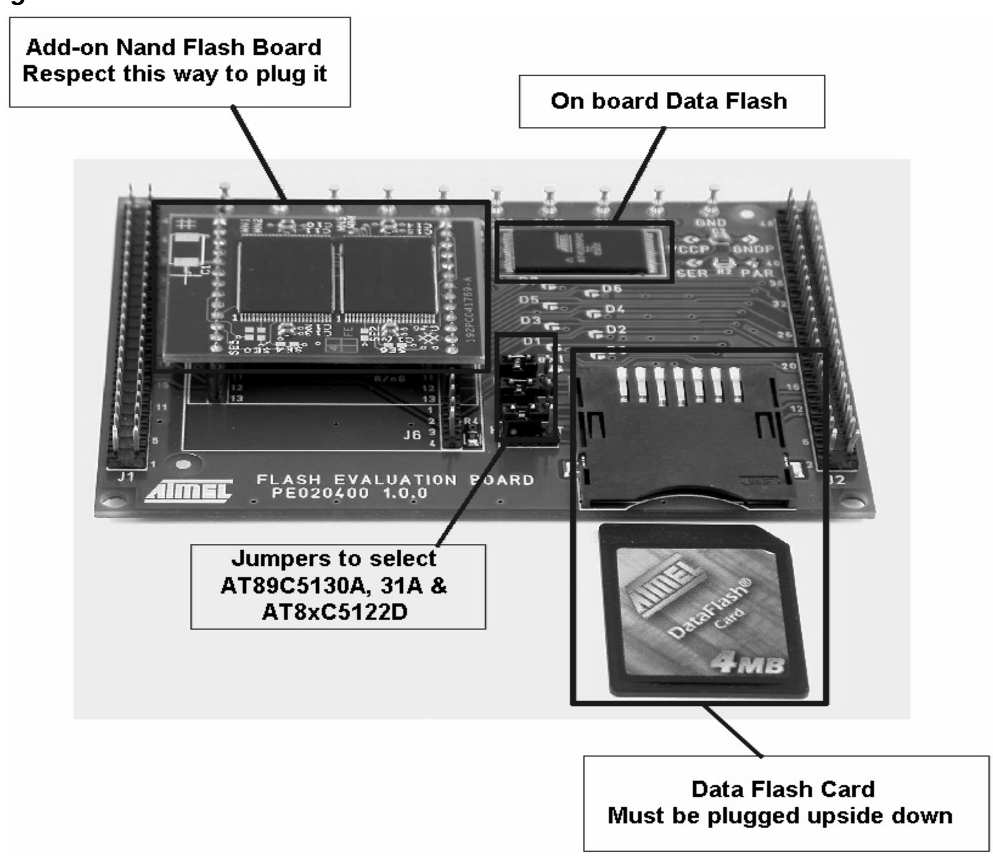


Figure 1-2. Flash Evaluation Board with the related memories



Section 2

Hardware Description

2.1 CPU board selection

As mentioned above, the Flash evaluation board can be used either with the AT89C5130/31A or AT8xC5122 D. The figure below show the jumpers state to enable each mode :

Figure 2-1. AT8xC5130/31AD Jumpers state

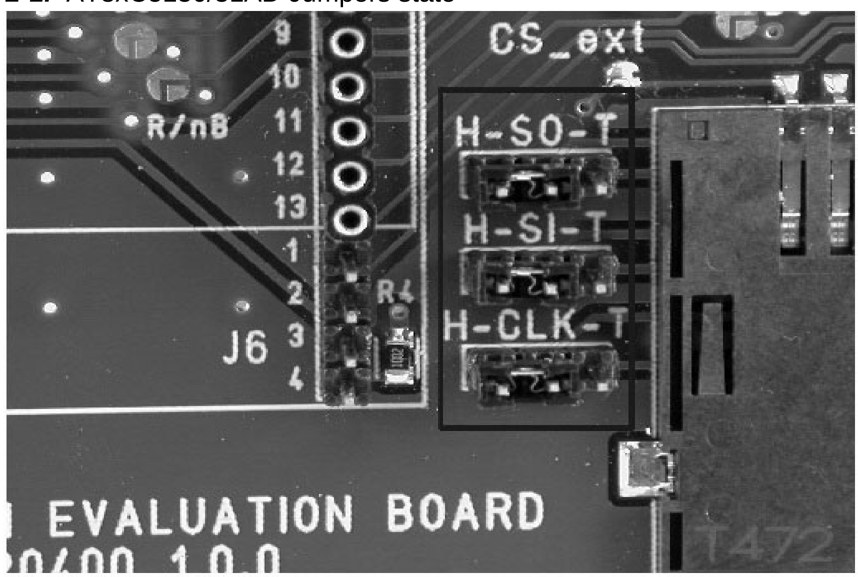
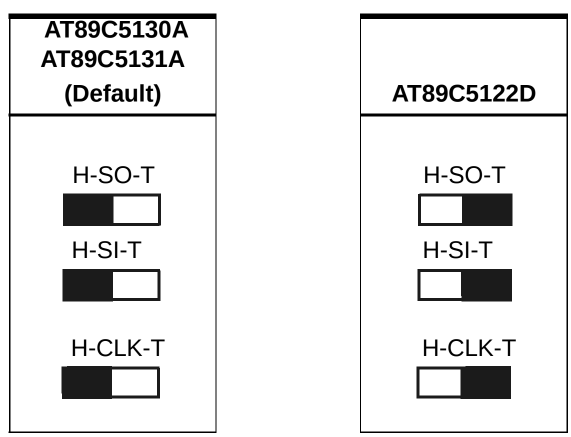
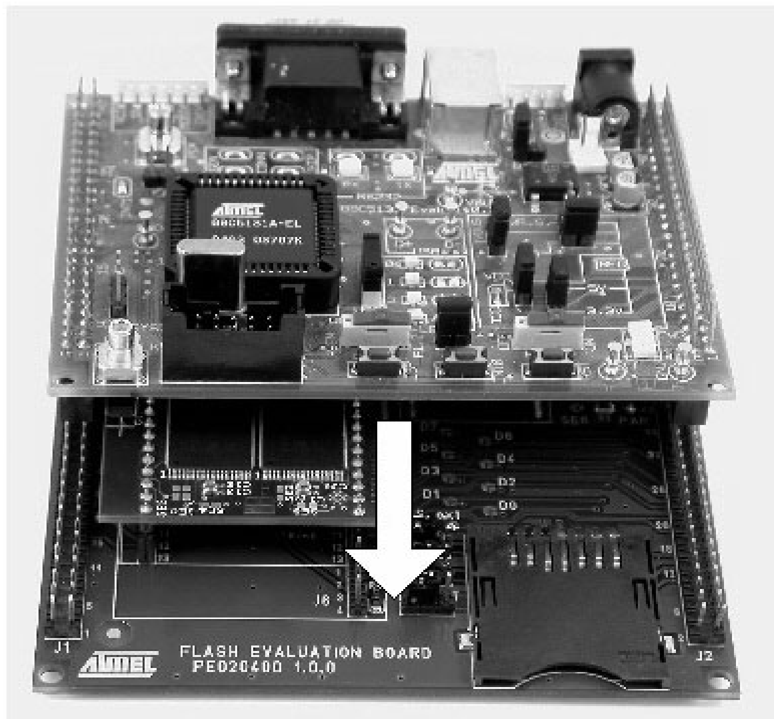


Figure 2-2. Jumpers state



The figures below show how to plug the Flash evaluation board to AT89C5130/31A or AT8xC5122 D evaluation board (AT89STK05 or AT89STK03) :

Figure 2-3. Flash evaluation board plugged to AT89C5130/31A evaluation board (AT89STK05)



Warning : Before plugging the Flash Evoluation Board (AT89STK10) to the AT89C5130/31A evaluation board (AT89STK05), disconnect the three LEDs by removing the solder on solder straps. The figure below shows the location of these solder straps :

Figure 2-4. AT89STK-05 - LEDs Disconnection

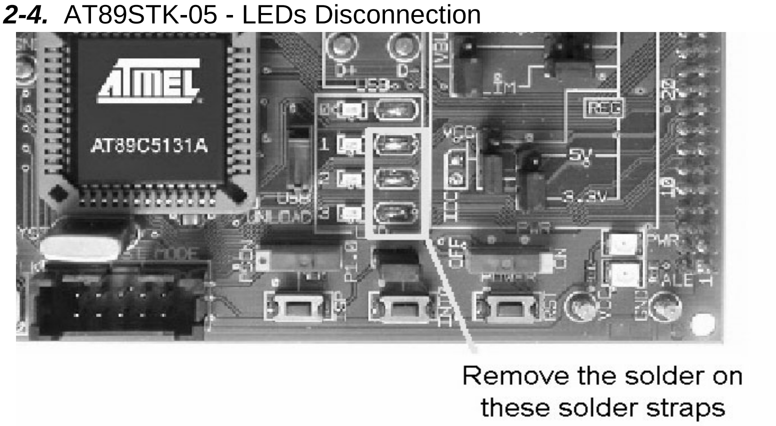
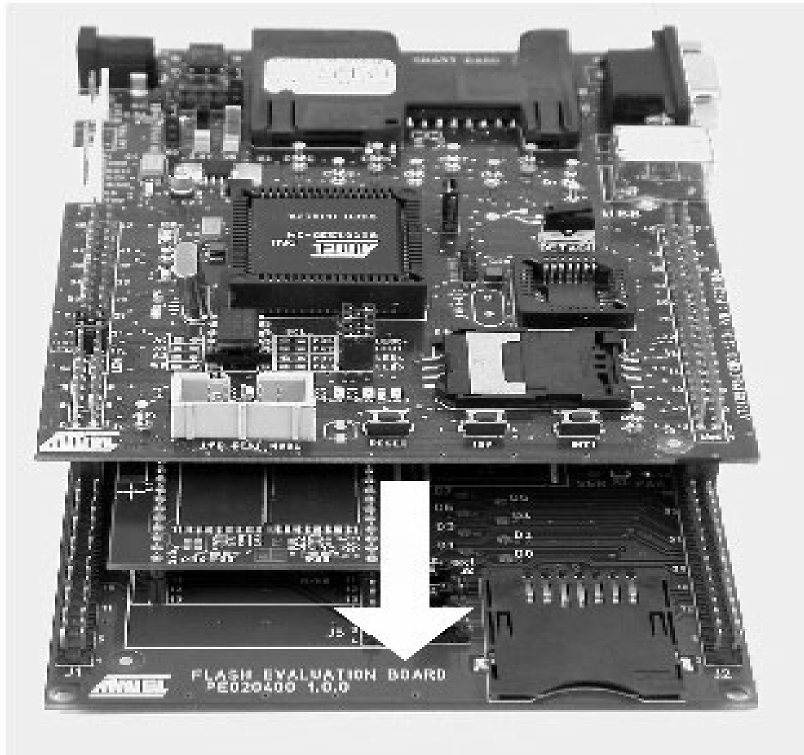


Figure 2-5. Flash evaluation board plugged to AT8xC5122D evaluation board (AT89STK03)



2.2 Power supply

The Flash Evaluation Board power is supplied by the CPU board. The power supply must be set to 3.3V for the AT89C5131A Evaluation board and 3.6V for the AT8xC5122D Evaluation board. The figure 2.5 shows the different possible configurations of the AT89C5130/31A Evaluation board (AT89STK05) and the figure 2.6 shows how to select 3.6V on the AT8xC5122D Evaluation board in the 3.6V power supply configuration :

Figure 2-6. Power supply (3.3V) - AT89C5131A Evaluation Board (AT89STK05)

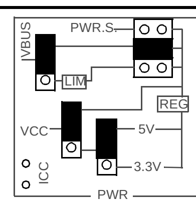
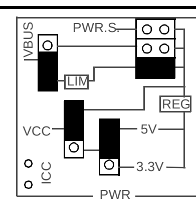
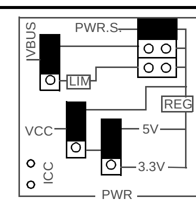
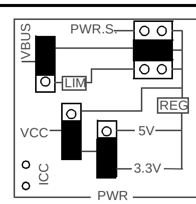
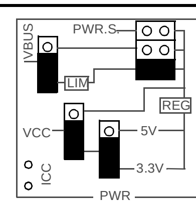
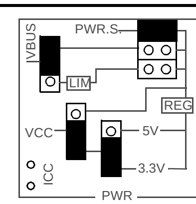
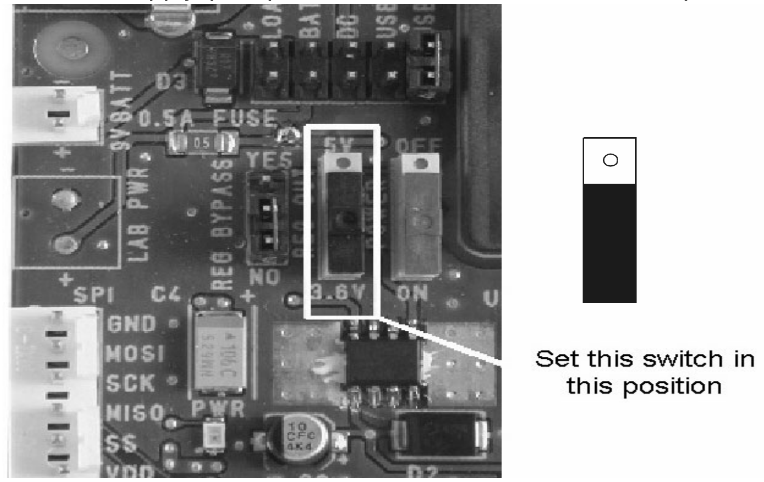
Power Source / Regulation	VBUS	VBUS and Current Limiter	External
Direct Input			
3.3V Regulate			

Figure 2-7. Power supply (3.6V)- AT8xC5122 D Evaluation Board (AT89STK03)



2.3 Memory selection

The Flash evaluation board supports three Flash memories (Pluggable Nand Flash, Pluggable DataFlash Card and On board DataFlash). Just one memory can be activated at the same time.

To configure the board with your specific usage, you have to put the solder straps in the right state.

Figure 2-8. Solder straps

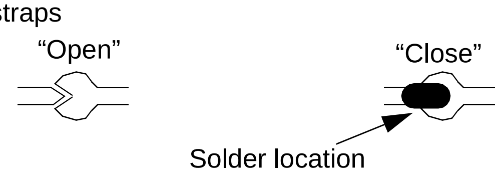
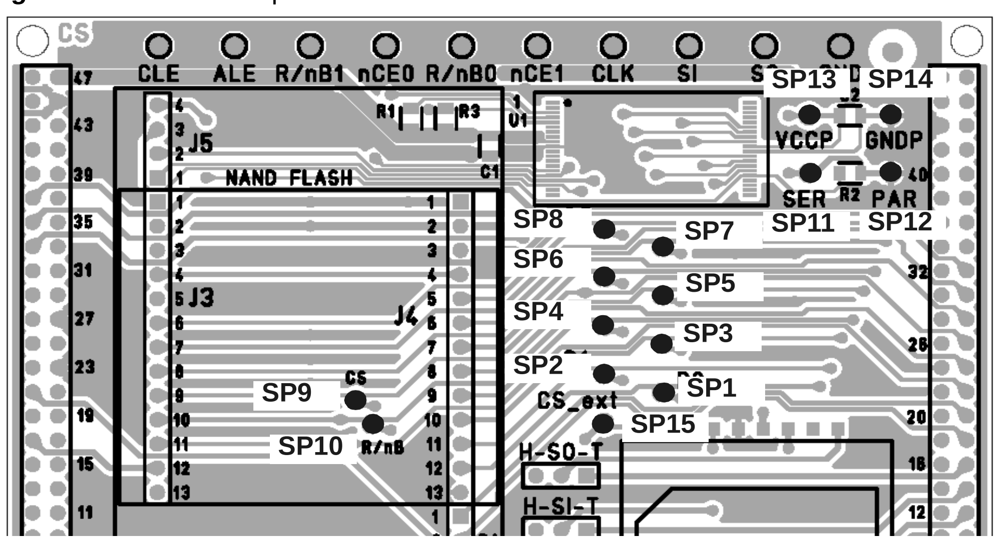


Figure 2-9. Solder Straps location



The tables hereunder show the configuration related to each memory mode :

Table 1. Nand Flash Configuration (Default configuration)

Reference	Name	Function	State
SP1..8	D0..7	Connect Data P0 on onboard dataflash	Open
SP9	CS	Connect CS of internal dataflash	Open
SP10	R/nB	Connect R/nB on dataflash	Open
SP 11	SER	Select DataFlash in serial mode	Open
SP12	PAR	Select DataFlash in parallel mode	Open
SP 13	VccP	Connect power supply of parallel interface of DataFlash	Open
SP 14	GNDP	Connect ground of parallel interface of DataFlash	Open
SP 15	CS_ext	Connect CS of external dataflash	Open

Table 2. On Board DataFlash Configuration (Serial mode)

Reference	Name	Function	State
SP1..8	D0..7	Connect bus P0 on onboard dataflash	Open
SP9	CS	Connect CS of internal dataflash	Close
SP10	R/nB	Connect R/nB on dataflash	Close/Open
SP 11	SER	Select DataFlash in serial mode	Close
SP12	PAR	Select DataFlash in parallel mode	Open
SP 13	VccP	connect power supply of parallel interface of DataFlash	Open
SP 14	GNDP	connect gnd of parallel interface of DataFlash	Open
SP 15	CS_ext	Connect CS of external dataflash	Open

Table 3. On Board DataFlash Configuration (Parallel mode)

Reference	Name	Function	State
SP1..8	D0..7	connect bus P0 on onboard dataflash	Close
SP9	CS	Connect CS of internal dataflash	Close
SP10	R/nB	Connect R/nB on dataflash	Close
SP 11	SER	put DataFlash in serial mode	Open
SP12	PAR	put DataFlash in parallel mode	Close
SP 13	VccP	connect power supply of parallel interface of DataFlash	Close
SP 14	GNDP	connect gnd of parallel interface of DataFlash	Close
SP 15	CS_ext	Connect CS of external dataflash	Open

The firmware doesn’t support this mode.

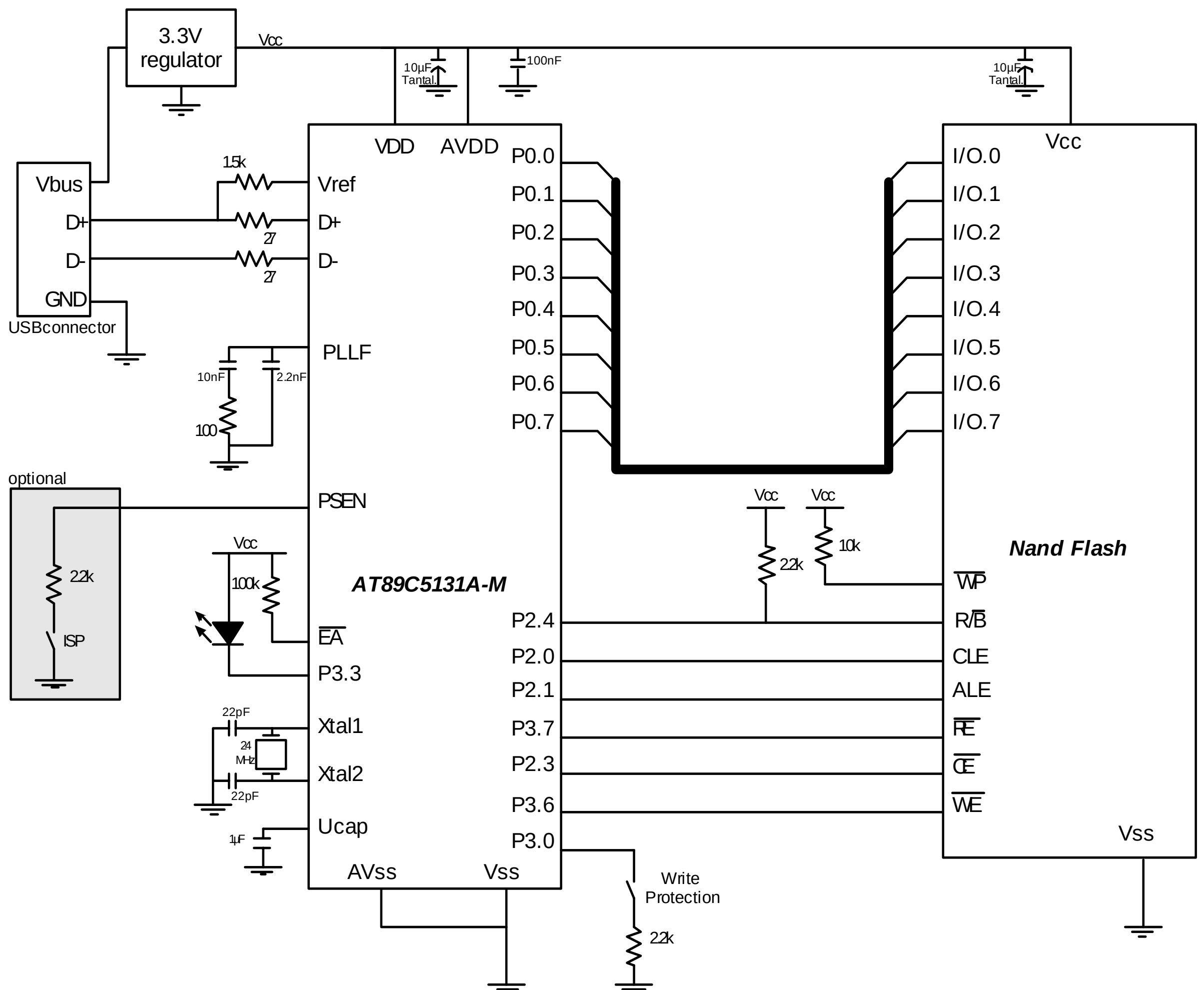
Table 4. Pluggable DataFlash Card Configuration

Reference	Name	Function	State
SP1..8	D0..7	connect bus P0 on onboard dataflash	Open
SP9	CS	Connect CS of internal dataflash	Open
SP10	R/nB	Connect R/nB on dataflash	Open
SP 11	SER	put DataFlash in serial mode	Open
SP12	PAR	put DataFlash in parallel mode	Open
SP 13	VccP	connect power supply of parallel interface of DataFlash	Open
SP 14	GNDP	connect gnd of parallel interface of DataFlash	Open
SP 15	CS_ext	Connect CS of external dataflash	Close

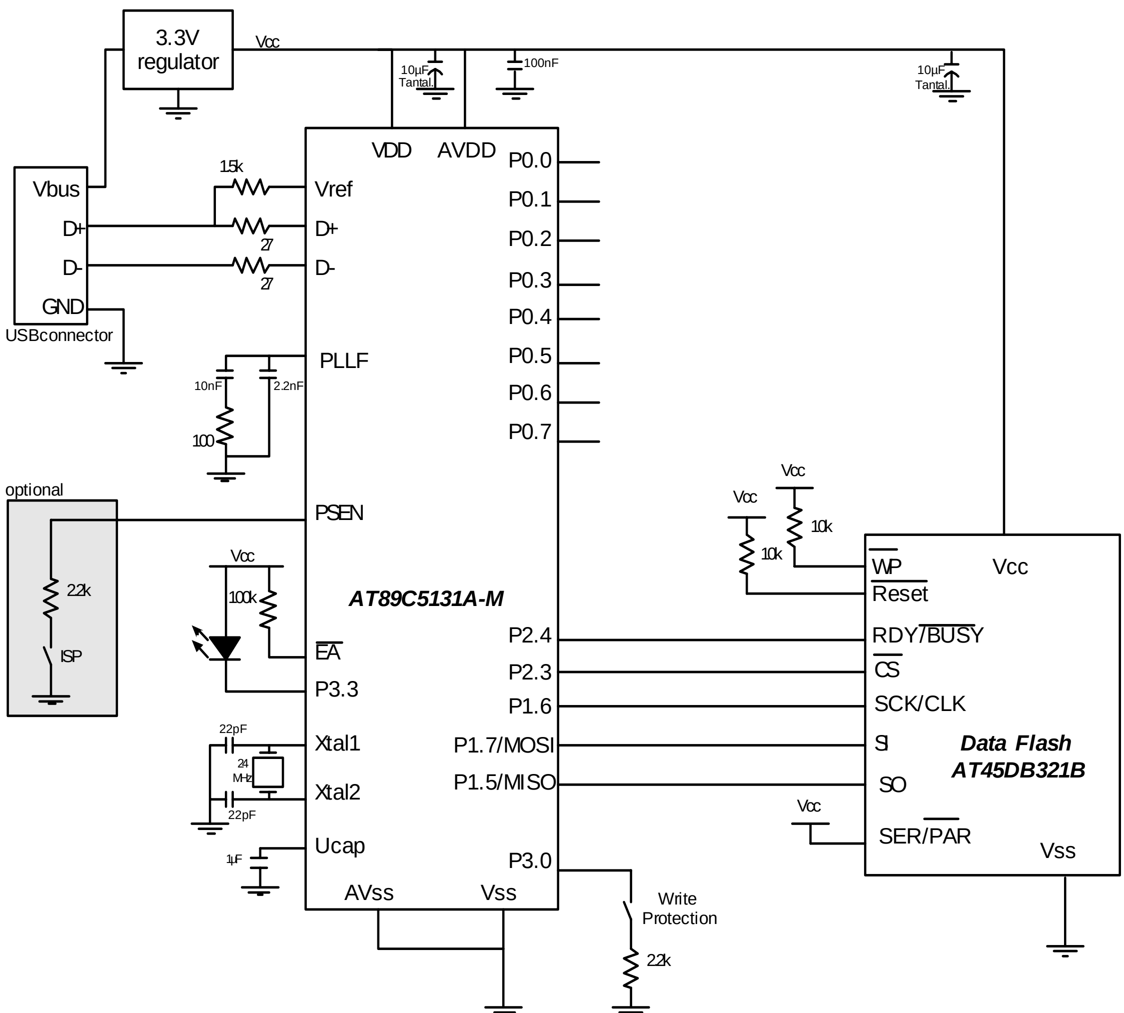
Section 3

Typical Applications

3.1 Nand Flash Application



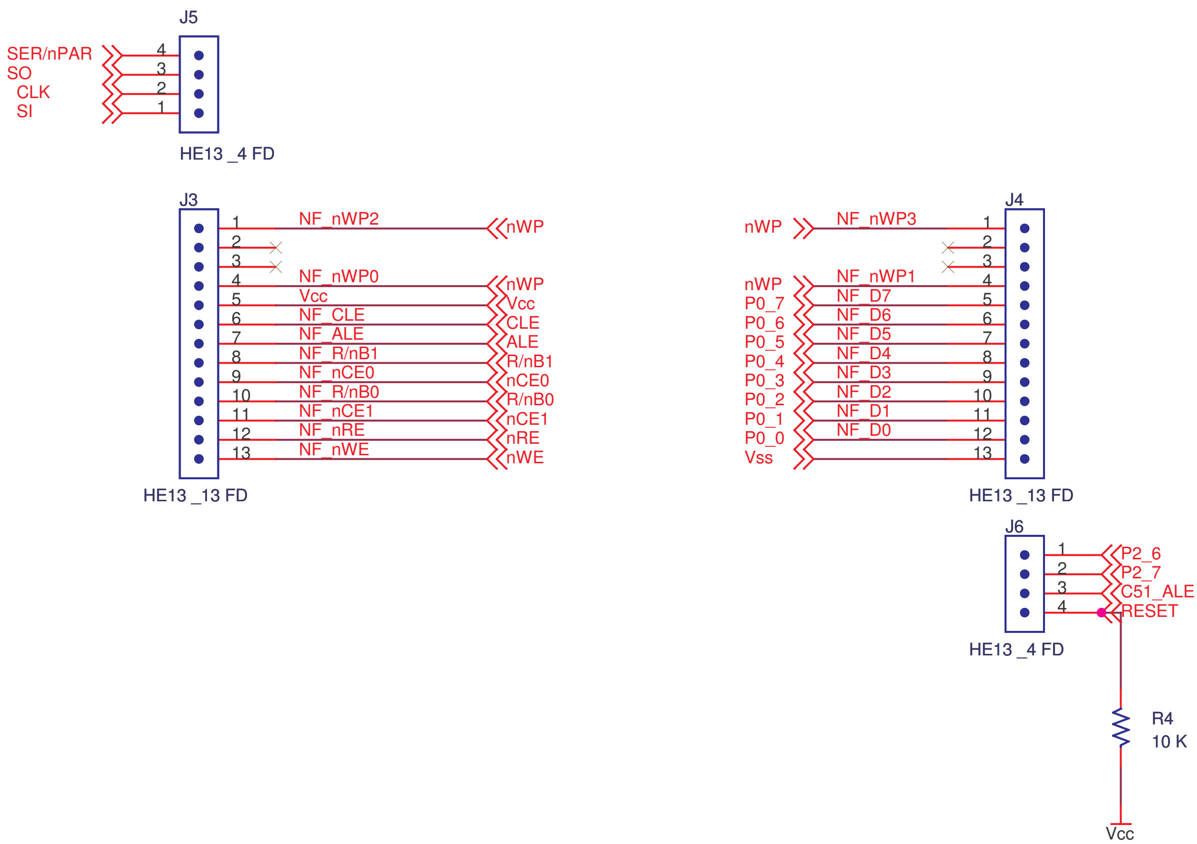
3.2 Serial Dataflash Application

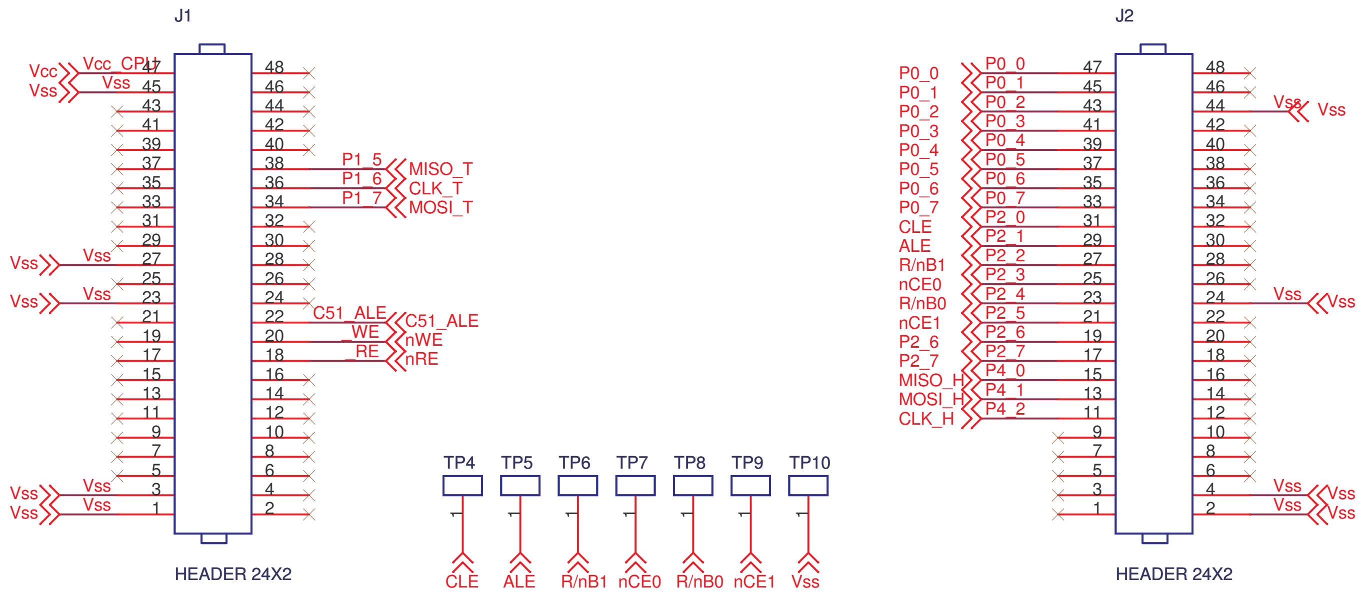


Section 4

Annex

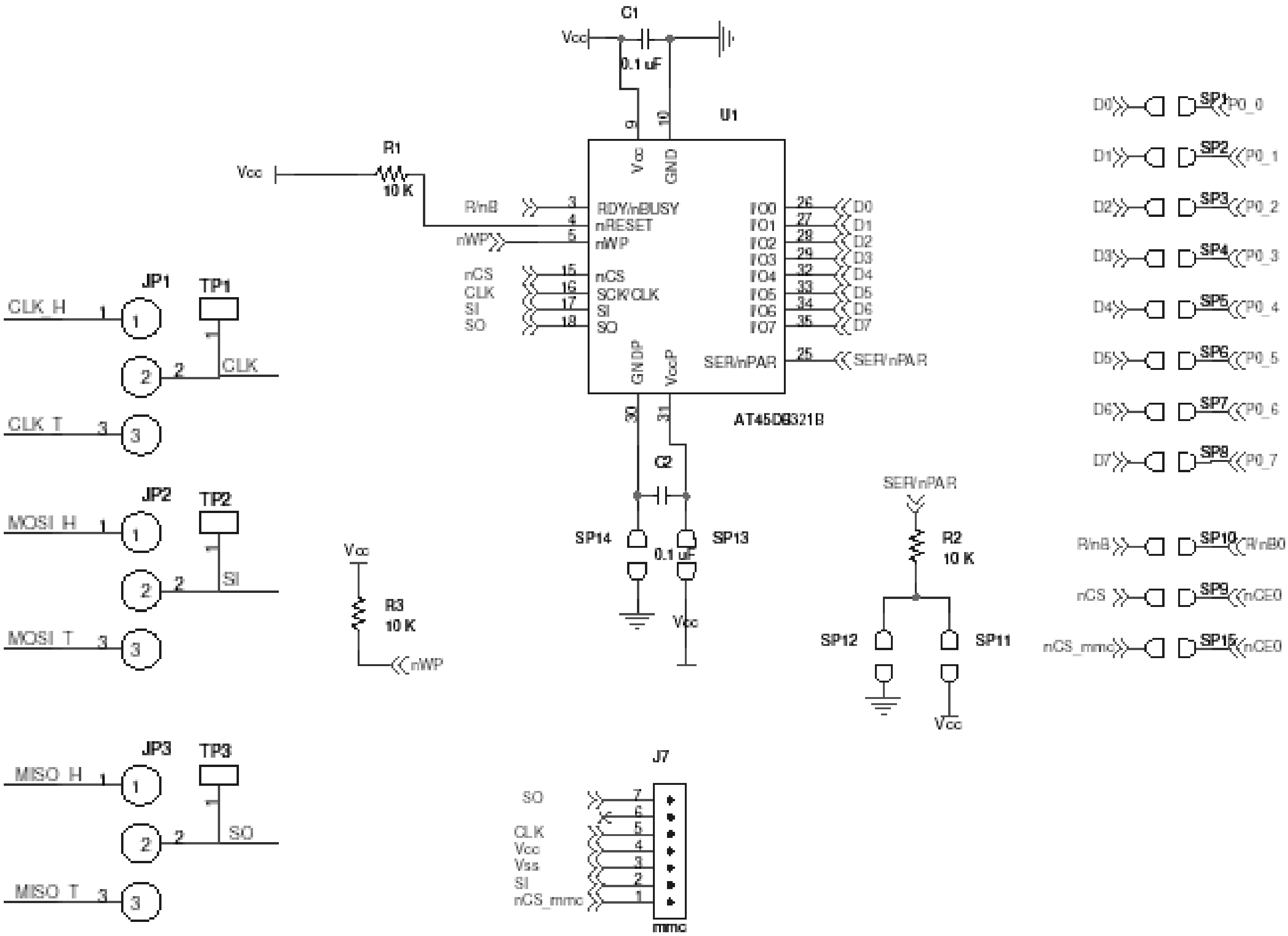
4.1 Flash Evaluation Board





Flash Board Left

Flash Board Right



C1
Vcc
0.1 uF
U1
R1
10 K
Vcc
RDY/nBUSY
nRESET
nWP
nCS
SCK/CLK
SI
SO
SER/nPAR
AT45DB321B
R/nB
nWP
nCS
CLK
SI
SO
D0
D1
D2
D3
D4
D5
D6
D7
SER/nPAR
JP1
TP1
CLK_H
CLK
CLK_T
JP2
TP2
MOSI_H
SI
MOSI_T
JP3
TP3
MISO_H
SO
MISO_T
C2
SP14
SP13
0.1 uF
Vcc
R3
10 K
nWP
R2
10 K
SP12
SP11
SP1
SP2
SP3
SP4
SP5
SP6
SP7
SP8
SP10
SP9
SP15
P0_0
P0_1
P0_2
P0_3
P0_4
P0_5
P0_6
P0_7
R/nB0
nCE0
nCS_mmc
J7
CLK
Vcc
Vss
mmc

4.2 Nand Flash Add-on board

Figure 4-1. Schematic

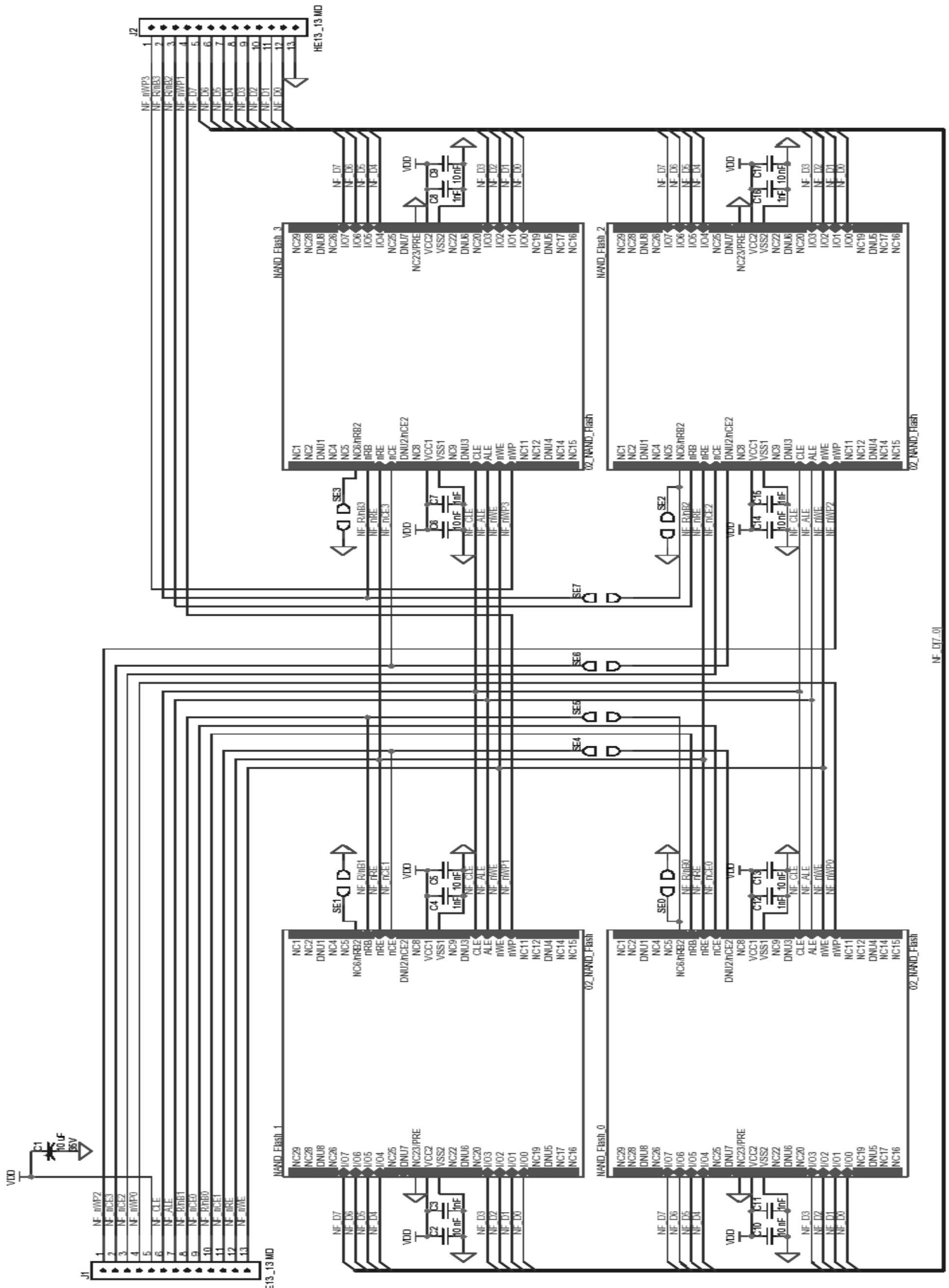


Figure 4-2. Component Side

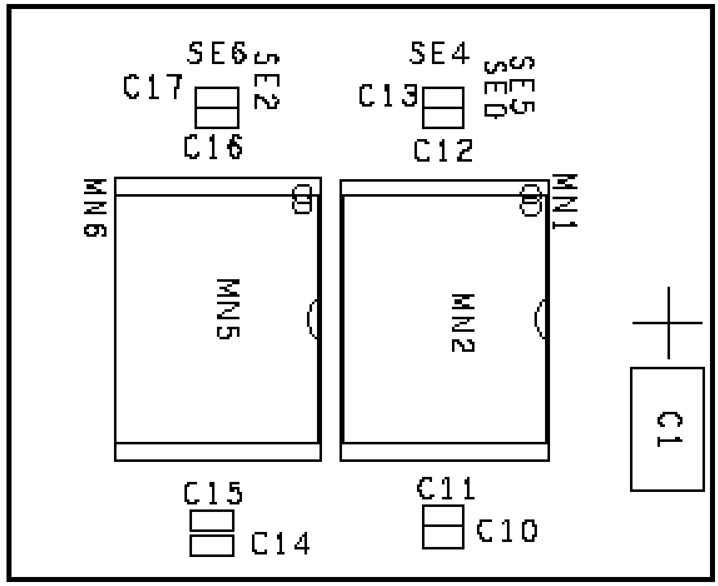
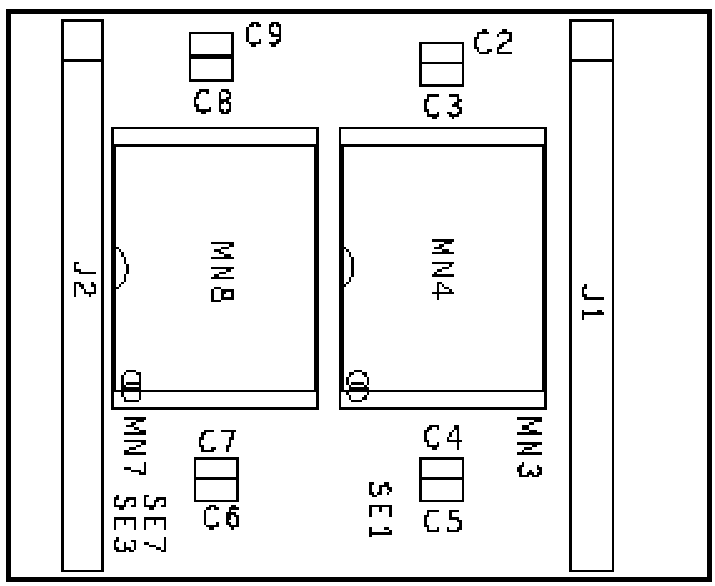


Figure 4-3. Solder Side



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